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Andreas Wolfert

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OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P.  
1940 DUKE STREET  
ALEXANDRIA, VA 22314

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* ANDREAS WOLFERT, CHRISTIAN MULLER,  
ECKHARD STROFER, MARKUS WEBER, JOACHIM PFEFFINGER  
and CARSTEN KNOSCHE

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Appeal 2009-008651<sup>1</sup>  
Application 10/523,919  
Technology Center 1600

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Decided: May 7, 2010

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Before TONI R. SCHEINER, RICHARD M. LEBOVITZ, and  
FRANCISCO C. PRATS, *Administrative Patent Judges*.

LEBOVITZ, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 by the Patent  
Applicants from the Patent Examiner's rejection of claims 1-6 as obvious.

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<sup>1</sup> Heard on April 14, 2010.

The Board's jurisdiction for this appeal is under 35 U.S.C. § 6(b). We reverse.

### STATEMENT OF THE CASE

The claimed subject matter is to a process for preparing an aromatic diisocyanate involving reacting a phosgene with a diamine in the gas phase at specifically recited temperature and pressure conditions. Claims 1-6 are pending and stand rejected under 35 U.S.C. § 103(a) as obvious in view of Ohlinger, U.S. Pat. No. 4,581,174, issued Apr. 8, 1986 (Ans. 3).

Claim 1, the only independent claim on appeal, reads as follows:

A process for preparing an aromatic diisocyanate by reacting a phosgene with a diamine in the gas phase, wherein the reaction is carried out in a reaction zone in which the pressure is more than 3 bar and less than 20 bar and the temperature in the reaction zone is from more than 200°C to less than 600°C.

### STATEMENT OF THE ISSUES

Was the scope of claim 1 properly construed to require that only the phosgene be reacted in the gas phase?

Whether Ohlinger would have reasonably suggested to persons of ordinary skill in the art the recited reaction conditions of a pressure “more than 3 bar and less than 20 bar” and a temperature “from more than 200°C to less than 600°C”?

### PRINCIPLES OF LAW

During patent examination, claims “are to be given their broadest reasonable interpretation consistent with the specification, and ... claim language should be read in light of the specification as it would be interpreted by one of ordinary skill in the art.” *In re Bond*, 910 F.2d 831,

833 (Fed. Cir. 1990).” *In re American Academy Of Science Tech Center*, 367 F.3d 1359, 1364 (Fed. Cir. 2004).

“During [patent] examination, the examiner bears the initial burden of establishing a *prima facie* case of obviousness.” *In re Kumar*, 418 F.3d 1361, 1366 (Fed. Cir. 2005).

In making an obviousness determination, “there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006); *see also KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007).

#### FINDINGS OF FACT

Ohlinger patent (U.S. Patent No. 4,581,174, Apr. 8, 1986)

1. Ohlinger teaches that the “manufacture of isocyanates from primary amines and phosgene has been disclosed. Depending on the nature of the amines, the reaction is carried out either in the gas phase or in the liquid phase” (Ohlinger, col. 1, ll. 11-14).

2. In the “SUMMARY OF THE INVENTION,” Ohlinger describes the invention as:

a process for the continuous preparation of organic isocyanates by reacting organic amines with phosgene in the presence of organic solvents under pressure at elevated temperature, whereby the reaction mixture is partially recycled in a loop . . .

(*Id.* at col. 2, ll. 52-57.)

3. “Gaseous and/or, preferably, liquid phosgene is used as the other initial component.” (*Id.* at col. 4, ll. 11-12.)

4. “The reaction is advantageously carried out at from 100° to 220 °C., preferably from 120° C. to 180° C., and at pressures of from 5 to 100 bars, preferably from 15 to 50 bars.” (*Id.* at col. 4, ll. 46-49.)

#### Specification

5. “In the process of the present invention, the reaction of phosgene with diamine occurs in the gas phase. For the purposes of the present invention, the term ‘reaction in the gas’ phase means that the feed streams react with one another in the gaseous state.” (Spec. 4: 28-32.)

#### CLAIM INTERPRETATION

Claim 1 is to a “process for preparing an aromatic diisocyanate by reacting a phosgene with a diamine in the gas phase.” The Examiner interpreted “in the gas phase” to read on processes in which “only the diamine” is in a gas phase (Ans. 4). Appellants challenge the Examiner’s interpretation.

During patent examination, the words in a claim are given their broadest reasonable meaning as they would be understood by one of ordinary skill in the art having read the Specification. Accordingly, to properly interpret the scope of the claim, we must first turn to the Specification for guidance. In this case, the Specification defines “‘reaction in the gas’” phase to mean that the “‘feed streams’” of the phosgene and diamine components “react with one another in the gaseous state.” (FF5.) Therefore, the claimed process comprising “reacting a phosgene with a diamine in the gas phase” would be interpreted by the ordinary skilled to mean that both the phosgene and diamine react in a gaseous phase, and both

are in a gas phase. The Examiner improperly interpreted the scope of claim 1 to require that only the diamine is in the gas phase.

### ANALYSIS

The process of claim 1 for making aromatic diisocyanates involves reacting a phosgene and diamine, both in gaseous states, “in a reaction zone in which the pressure is more than 3 bar and less than 20 bar and the temperature in the reaction zone is from more than 200°C to less than 600°C.” The Examiner rejected the claim based on Ohlinger’s description of a process for making isocyanates by reacting amines with phosgene at temperature and pressure conditions which overlapped with the claimed values (Ans. 3). The Examiner acknowledged that Ohlinger did not “explicitly state the temperature in the reaction zone,” but concluded that it would have been obvious to determine those conditions and optimize them “with the reasonable expectation that the yields would be increased, the energy consumption would be lowered and to facilitate operations overall.” (*Id.*) The Examiner also determined that it was “prima facie obvious to perform the reaction in the gas phase, as well as in the liquid phase, particularly since the prior art also teaches that the reaction can be carried out in either the gas phase or liquid phase . . . (column 1, line 13-14). (*Id.* at 4; FF1.)

The Examiner has the burden of establishing prima facie obviousness by providing evidence that the prior art reasonably discloses or suggests all the limitations of the claimed invention. This burden was not met.

First, the scope of the claim was not properly interpreted. Claim 1 was interpreted to require that only the diamine react in the gas phase. This

was an unreasonable interpretation of claim 1 in light of the Specification. Rather, the claimed process comprising “reacting a phosgene with a diamine in the gas phase” is properly interpreted to mean that both the phosgene and diamine react in a gaseous phase. Consequently, the full scope of the claim was not compared to the prior art.

Secondly, there is insufficient evidence to establish that the working conditions described by Ohlinger for a process in which only one component was in the gas state, would have been reasonably expected to work for a process in which both the phosgene and diamine were in the gas phase. Ohlinger’s process occurred with solvent in the liquid phase (FF2; App. Br. 3-4), even when one component was introduced in the gas phase (FF3). While Ohlinger teaches that the reaction can be conducted in either the gas or liquid phase (FF1), the temperature and pressure conditions disclosed by Ohlinger were for liquid phase reactions (FF2-4; App. Br. 3-4), not gas phase as required by claim. 1. Reasoning has not been presented as to why person of ordinary skill in the art, based on Ohlinger’s teachings of a reaction in liquid phase, would have utilized those conditions to “optimize” for a reaction accomplished in completely different state of matter.

For the foregoing reasons, we reverse the rejection of claim 1 and dependent claims 2-6.

Appeal 2009-008651  
Application 10/523,919

REVERSED

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OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P.  
1940 DUKE STREET  
ALEXANDRIA, VA 22314